

## **ABSTRACT**

**Leo Warnow** Technische Universität Ilmenau (Germany)

### **An image space method for multi-objective mixed-integer convex optimization**

We propose an algorithm for solving multi-objective mixed-integer convex optimization problems. We aim on determining a covering of the set of nondominated solutions which is the image set of the set of efficient solutions, also known as Pareto frontier. As the method works mainly in the image space it allows to handle larger numbers of variables. We compute an enclosure of the nondominated set by calculating lower and upper bound sets. For this purpose, we decompose the multi-objective mixed-integer convex optimization problem into several multi-objective continuous convex optimization problems, which we refer to as patches. Then, we iteratively compute and improve enclosures of the nondominated sets of those patches to finally combine them to an enclosure of the nondominated set of the multiobjective mixed-integer convex optimization problem with a certain width as quality guarantee. Additionally, we introduce a mechanism to reduce the number of patches that need to be considered in total by using linear relaxations.